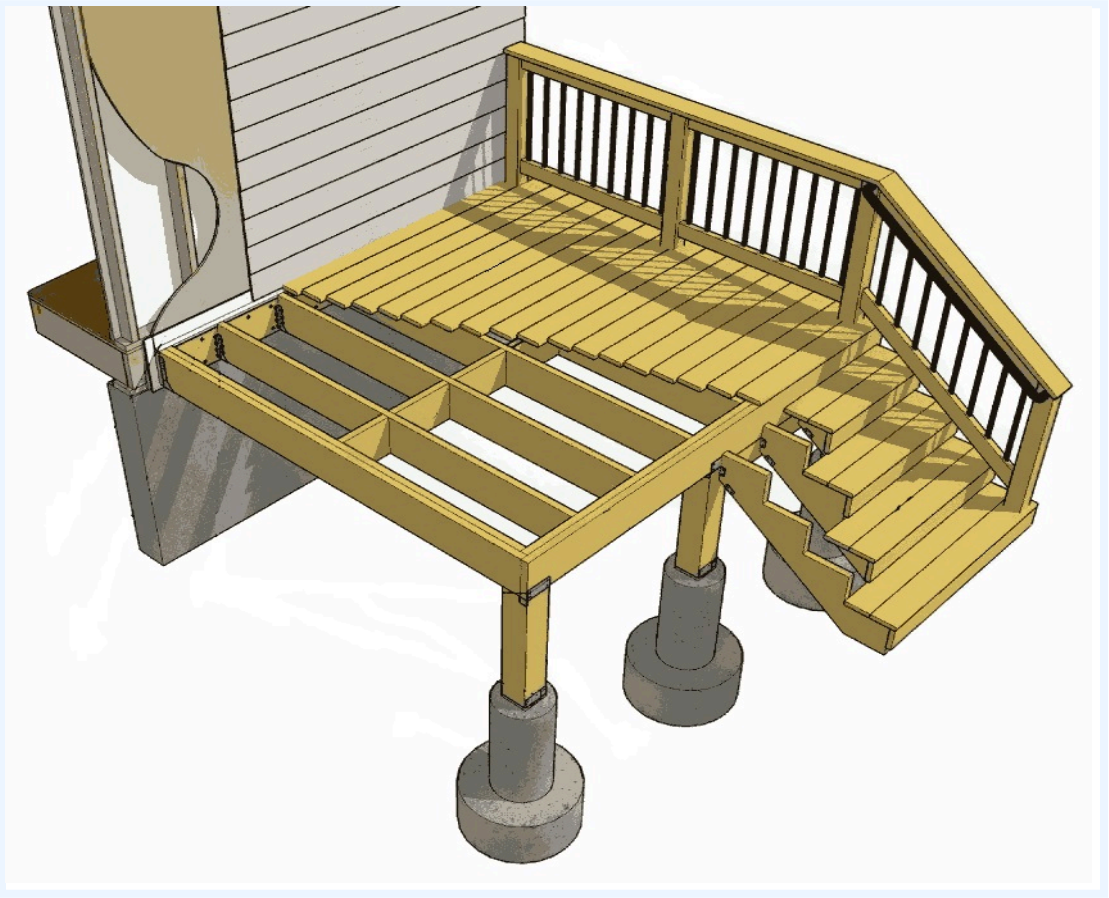
DECK GUIDE

WASHINGTON TOWNSHIP
Warren County



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1. Introduction

As a homeowner in Washington Township, the prospect of building a deck may be overwhelming - but the Code & Construction Office is here to help. This guide is intended to help with basic deck comprehension.

There are many types of decks: composite, tiered, wrap-around, etc. This guide focuses only on a basic deck. There are helpful tips on all types of decks available here though (including prior approvals).

Most information available for basic decks is full of codes and regulations; numbers that point to state codes that won't make sense to most homeowners. The goal of this guide is to sort out all the confusing rules and convert them to easy to understand information and steps in getting a basic deck completed. Keep in mind, this is a guide - but please refer to professional contractors for more detailed information as to how to construct a basic deck.

2. Prior Approvals

2.1 Zoning

NOTE:
The Zoning Officer is available on Mondays from 2:00 pm to 7:00 pm (or by appointment).

Any deck, regardless of cost and size, requires both Zoning and Code approval. There are many codes to follow when it comes to building a deck, and Washington Township may have regulations that differ from other towns in New Jersey. Before you buy any materials start building, you must:

- Get zoning approval
- Get a building permit

2.2 Permit

With zoning approval out of the way, the next prior approval required is a building application. The application consists of one permit jacket (F100) and one building technical sheet (F110).

2.3 Permit Jacket (F100):

- Fill in your property's block and lot number(s).
- In Identification, fill out the proposed work site (the address), the owner name, a telephone number, e-mail, and contractor information (or write "self" if you are doing the work).
- In Proposed Work, check off "Minor Work" and "Building". Write in an estimated cost of work (it doesn't have to be an exact price amount, but something realistic is fine).

2.4 Building Technical Sheet (F110):

Just like with the F100, fill out the block and lot number(s) and the worksite/contractor information. This information should match the same information on the F100.

Write in an estimated cost of work on line 2 (Rehabilitation). Sign and Print your name, or have the contractor sign and print their name.

- Write a description of work, including the deck size dimensions

Please allow the Code & Construction office 10 days to approve a building permit. You will then get a phone call with the permit price; come into the office to pay for the permit and receive a yellow placard that can be placed in a window or on your door. You can then start the deck building process.

As you build the deck you will need to schedule inspections (footing, framing, final). For more information about inspections refer to page 6.

3. Before You Start

A basic deck consists of: footings, posts, joists, decking, railing, stairs, and handrails. As you go along with this guide, you will see that each section breaks down the main parts of a deck - giving advice on how to install each section and other important information.

The deck assembly is done in steps. Deck inspections are done in steps as well. As you complete certain deck processes, you must call the Code & Construction office to schedule the following inspections:

- Footing Inspection
- Framing Inspection
- Final Inspection

The footing inspection consists of the building inspector making sure the footings (holes) for the deck posts are wide and deep enough (past the frost line of the soil).

The framing inspection consists of the building inspector making sure the decking is in good standing (the proper spacing is important).

The final inspection makes sure that all the railings, steps, and guardrails are properly installed.

If you ever have any questions about inspections and/or what must be inspected, please call the Code & Construction office at (908) 835-1732.

4. Footing and Post

Footings are an essential part of any deck, and must be done first. They supply the necessary foundation that will support the deck, built beneath the frost line of soil (so that they don't crack).

There are a few options when it comes to deciding on a deck's footings, but one will be used for a basic deck: buried post & footing.

NOTE:
Do not continue construction until footings are properly inspected.

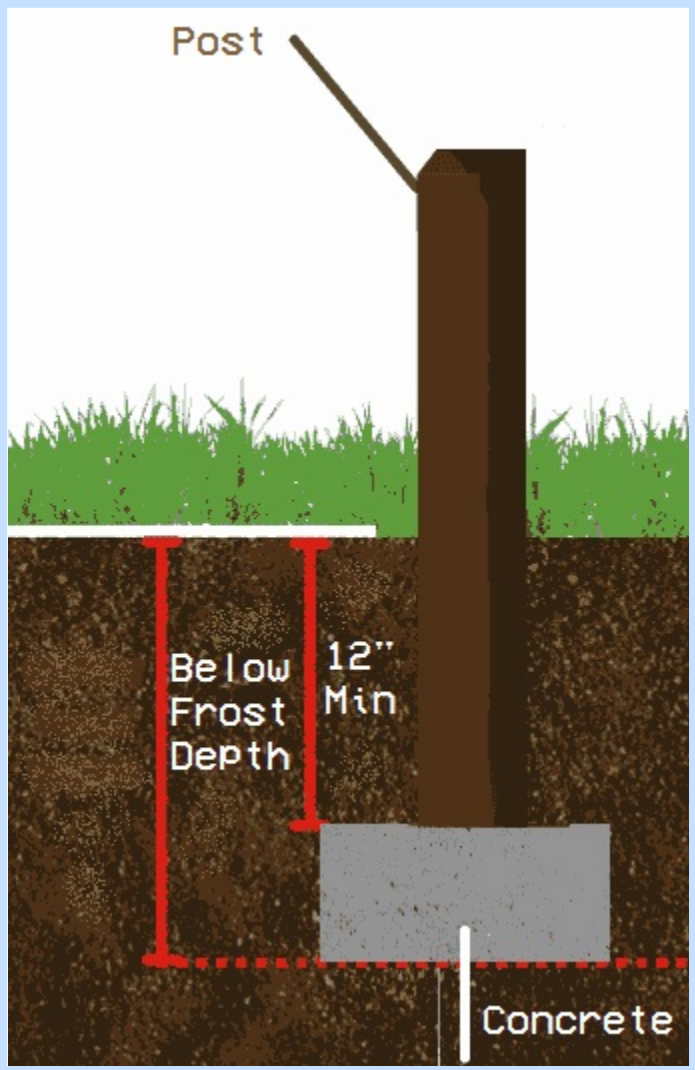

Diagram 4.1 Buried Post & Footing Example

The footing is the concrete buried beneath the soil, and the post is the straight wooden board that'll be connecting the deck to the concrete. The buried post & footing requires a 48" deep hole that is 10-12" wide. The hole doesn't have to be dug perfectly, but do ensure that the last 8" must be perfect as it will be the area where concrete is poured.

4.1 Footings

How many footers you need depends on the size of the deck. An important rule to remember is that a footer should be placed 8 feet apart from another one. You could have 4, or 6, but it all depends on if you can place them 8 feet apart beneath the decking. Basic rectangular decks are easy to measure out using a tape measure and mason line to properly mark future footing locations.

4.2 Installing

The deck footings are easy to install, but still require accuracy for a safe and code compliant deck:

1. Remove Debris
   For a properly measured footing distance, all debris must be cleared from the future deck area.
2. Dig the Holes
   Use the proper tools for the job: a pointed shovel to dig into the soil, and a squared spade to get the sides of the hole flush and accurate.
3. Footing Inspection
   The first of the required building inspections is the footing inspection. The inspector will check that the holes are accurate and are properly below the frost line.
4. Pour the Concrete
   A bag of concrete mix will have the directions on how to pour. Make sure you use clean water. The mix should be a thick consistency and not thin. Smooth out the top of the concrete so that it is leveled.
5. Set the Post
   Once the concrete is set beneath the frost line you can then add the 4x4 post, centered in the middle of the hole, and bury it to the top of the hole with gravel.

NOTE:
How high the post goes all depends on how high the deck frame will be. It's better to go bigger and then just cut to fit the deck framing later on.

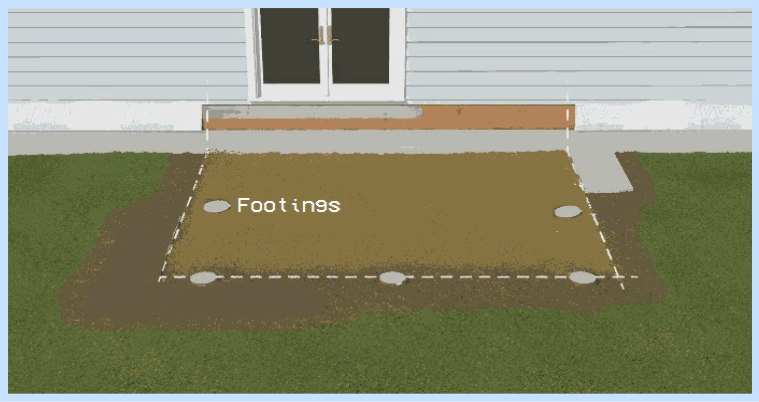

Diagram 4.2 Footings Example

**Footings to frost footings requirements ensure that holes/footings are deep enough in the ground so that they are below the frost line (frost line is approximately 36 inches deep in New Jersey)- thus preventing any cracking or damaging to the footing/ structure.*

5. Framing

The most important aspect of a deck's safety is a properly installed ledger. Most deck related collapses are due to inadequate ledgers. A ledger is what attaches a deck to the side of a house, keeping it in place.

Ledgers are also used to keep deck joists in place. Joists are used to build a deck frame. One can't exist without the other for a basic deck. You want the ledger to be attached a step below the entrance/exit point of the house.

5.1 Ledger

A ledger is essentially a board attached to the side of a house, with hardware attached to connect joists.

Free standing decks don't require a ledger board, but any deck attached to a house requires one.

A 2x4 board is used for the complete width of the planned deck. Follow these steps:

1. Remove House Siding
   The board must be installed to the side of a house with any siding removed.
2. Install Framing Nails
   To keep the ledger board in place before the final hardware is installed, install framing nails every 2 feet to keep the board attached to the side of the house.
3. Measuring Joists
   Joists are installed in the center of a ledger. The ending points of a ledger require a double joist. From the beginning point, measure out and mark the center of the ledger board every 16".
4. Install Fasteners
   Stager fasteners in two rows with 1/2 inch diameter bolts with 1/2 - 1 inch maximum sheathing.

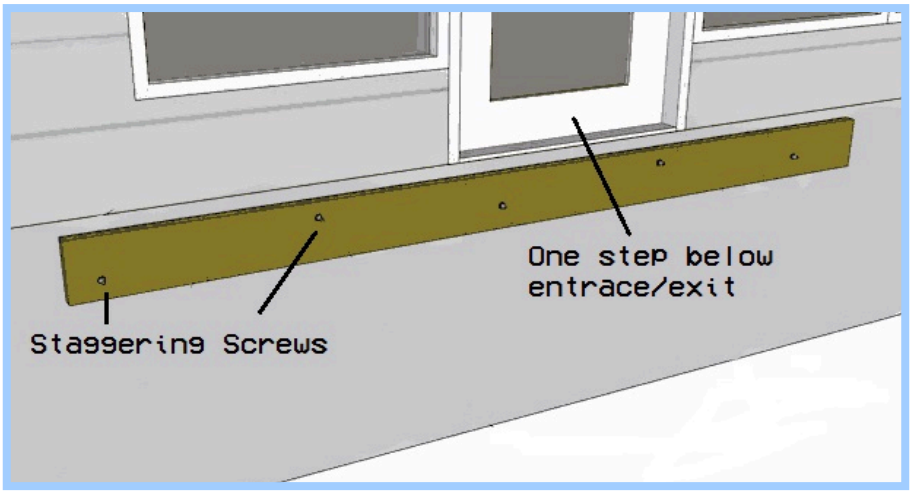

Diagram 5.1 Ledger with Staggering Screws Example

5.2 Framing

Framing is a straightforward process, especially for a basic deck. For a ground level deck, the frame sits flush on the ground, consisting of double boards. Double boards are used in the middle of the frame as well, attached to the ledger. The height of other decks all depends on where the exit or entrance to the home is. If the door is 4 feet above ground, then the framing will be 4 feet above ground.

Measure the length of a side of the deck (the ledger is the best starting point). Measure from one end to the other and add 3" to that length. Cut two (each part of the frame consists of two boards tied together) 2x6 boards. Install 2 1/2" wood screws to the boards.

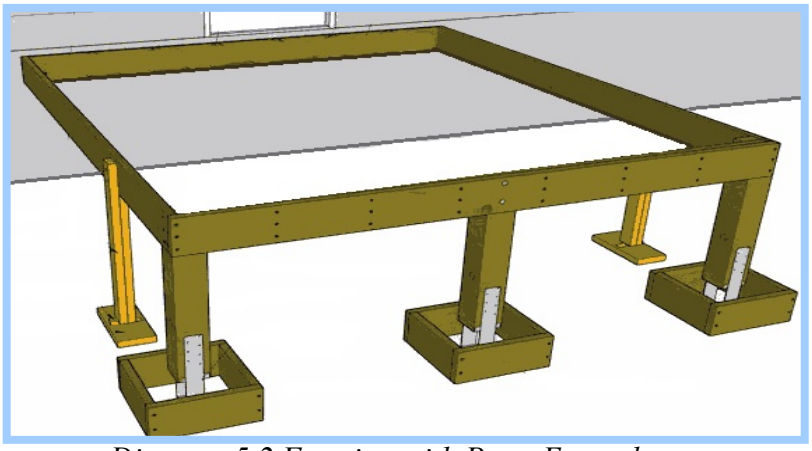

Diagram 5.2 Framing with Posts Example

Now you are ready to install the frame:

1. Attach Boards to the Ledger
   Install the two doubled-up boards on both ends of the ledgers, creating the sides of a deck frame.
2. Install to Posts
   These two doubled-up boards should be flush against the existing footing posts. They can be screwed into them.
3. Install Third Board
   With the two sides installed, you can now attach the third side of the frame to the two sides and footing posts.
4. Schedule a Frame Inspection
   The second required inspection is for a deck frame. Contact the Code & Construction office to get a proper approval for the frame.

6. Joists

6.1 What is a Joist

Joists are boards that go across the entire deck and attach to the outer frame. They are the foundation on which the decking is built upon.

Joist placements were marked on the ledger earlier in the construction of your deck. It is now time to install the actual joists.

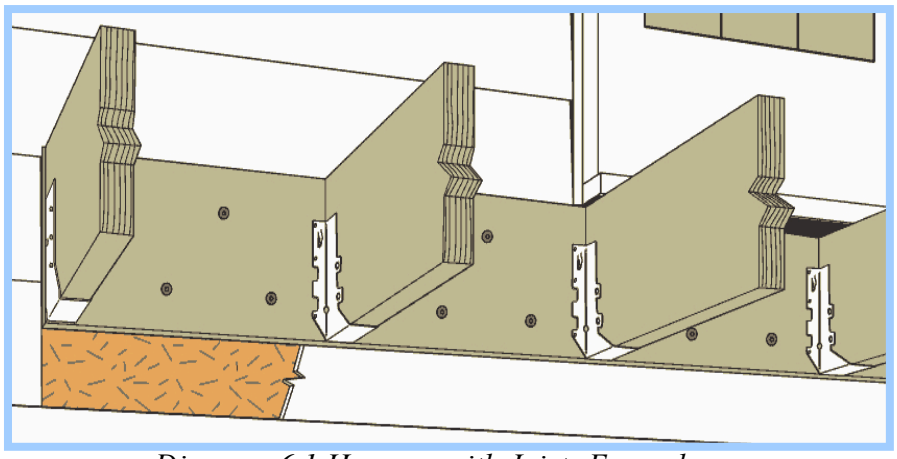

Diagram 6.1 Hangers with Joists Example

6.2 Joist Hangers

Joists aren't simply screwed into the ledger like the frame is- they must be installed with joist hangers. A joist hanger (also known as a fastener) is a piece of hardware that is installed on the marked areas of the ledger to reinforce the joist boards.

Install the joist hangers into the marked areas of the ledger (marked during the ledger installation). It is not recommended to use nails when installing joist hangers; a much better option is to use structural screws, such as Simpson Strong-Tie. A typical hanger will have 8 holes (4 on each side) to install into the ledger.

You can use a small piece of board to ensure the joist hangers are properly installed. The piece of board should fit snug into the hanger (replicating a 2x6 board).

With the hangers installed on the ledger, you can then install joist hangers on the opposite board (the third side of the frame). Correctly measure the distance from the joist hangers on the ledger, mark the position, and install the hangers- just like you did on the ledger.

6.3 Installing Joist

The joist boards can now be cut and installed. Follow these steps:

1. Measure and Cut the Joists
   From the ledger to the opposite frame board, measure the distance and cut the 2x6 boards into that proper size. Cut the number of boards to match the number of joist hangers installed.
2. Install the Joist Boards
   The board should fit snugly into the two joist hangers. Use a hammer to push the board down into place.
3. Screw in the Joists
   Install structural screws or deck nails into the side of the joists (the joist hanger will typically have 2 angled holes on each side).

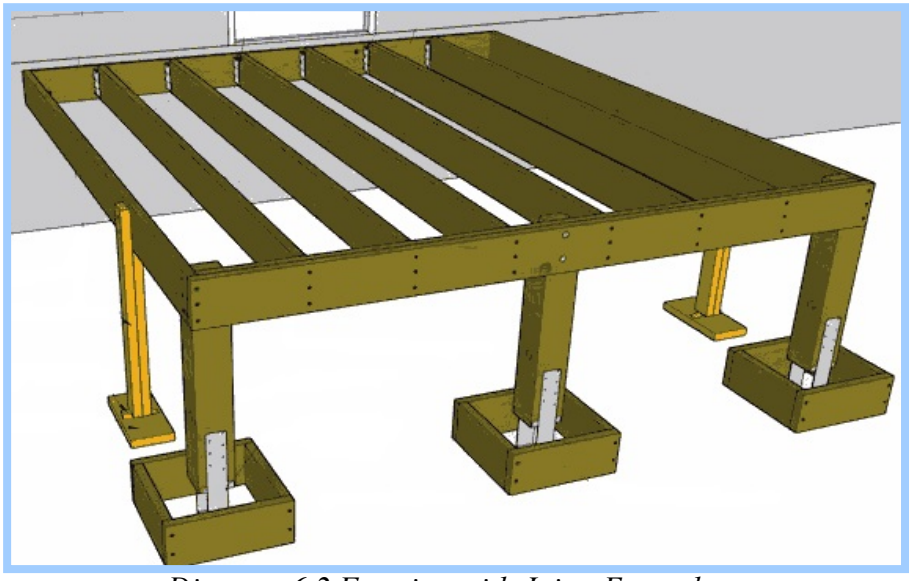

Diagram 6.2 Framing with Joists Example

7. Decking

With the joists properly installed, the inner workings of a deck is complete. Next comes the outer fixtures such as railings and handrails, but also the decking. Decking serves a bigger purpose than being the actual surface that is stood upon; decking keeps the framing strong.

NOTE:
Keep in mind that decking is inspected after framing.

Cedar wood is a popular choice for decking, though any pressure-treated wood can be used. It's best to go longer when laying down the planks, as some may have imperfections at the ends. Layout the planks opposite of the joists, with one end flush against the wall and the other going past the frame (to be cut in unison later).

Spacing is key when installing decking, since the planks can swell up depending on the weather. About ¼ inch is a good amount of space between each plank. A spacing tool can be used to correctly get the right amount of space.

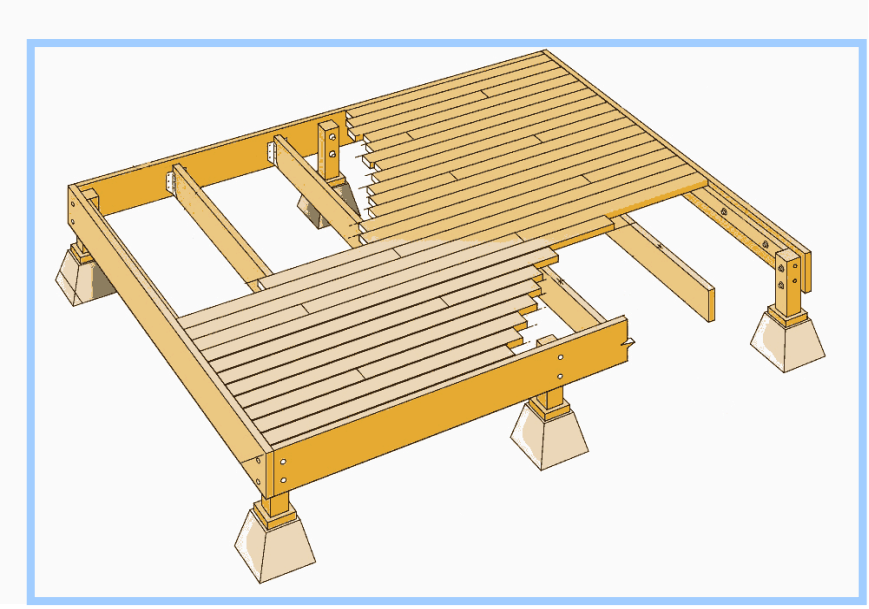

Diagram 7.1 Decking Example

7.1 Decking Steps

Follow these steps to correctly install the decking. Feel free to contact the building inspector for any questions or concerns.

1. Lay Out the Planks Opposite the Joists
   A typical size plank for decking is 1x6.
2. Space Out the Planks
   Use a spacing tool to divide the planks by ½ inch.
3. Screw the Planks into the Joists
   Use special deck screws to screw in each plank into the deck joists beneath it. Go 1" from both ends of the deck.
4. Cut Excess Decking
   Use a chalk line to measure a straight line and a power saw to cut a straight line, going ¼ inch over both ends of the frame.

8. Railing

Deck railing is an important safety feature of any deck. Railing is required for higher decks, but basic decks can also use railing. They can be used to enforce safety for children and pets, but also for recreational uses like placing drinks on a railing post.

Railing is connected to posts, with top and bottom rails(2x4s) running along horizontally. Deck railing consists of a few elements, but the construction process isn't difficult. A good way to space railing is to remember: A 4” sphere (ball) should not fit through the rail pickets. A 6” sphere (ball) should not fit beneath the rail.

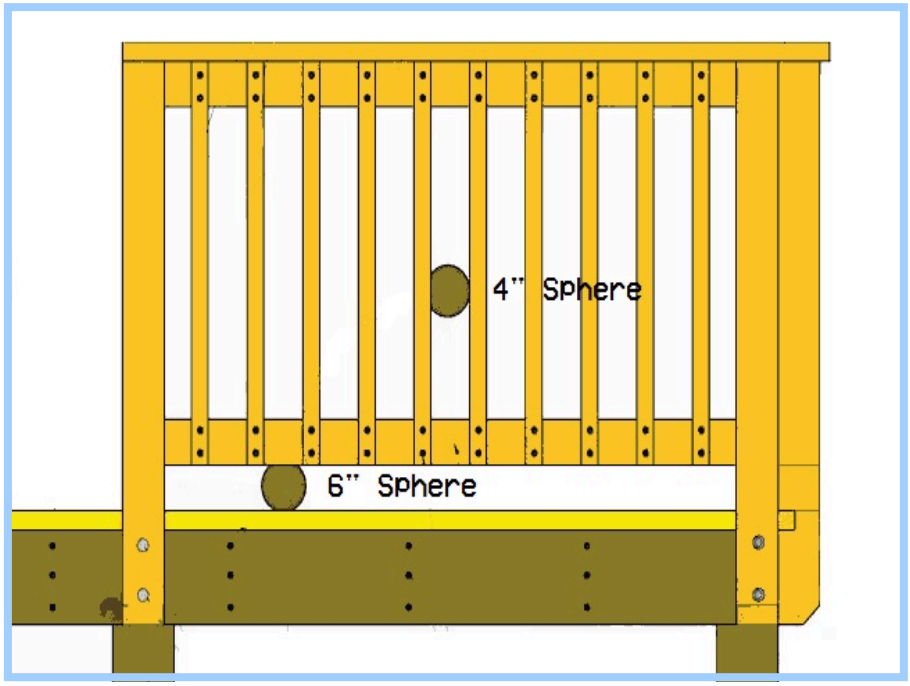

Diagram 8.1 Railing with Appropriate Spacing Example

8.1 Installing Rails

Having the correct spacing between each railing is an important safety feature - be sure to correctly measure the space out before istalling the rails.

Follow these steps to correctly install rails:

NOTE:
Just like with decking -railing is inspected after framing.

1. Install the Posts
   Railing can span about 8 ft between posts. Posts should have an overhang of a few inches to be easily installed into the deck frame.
2. Cut the Rails
   Cut 2x4 lumber into lengths equal to the distance between your deck posts.
3. Install Rails to Balusters
   Screw the 2x4 rails to the top and bottom balusters.
4. Install the Balusters to the Deck Posts

9. Steps

Deck steps are required for any basic deck. How many steps needed depends on the height of the deck itself. A basic deck will have a pad (usually concrete or gravel) with stair treads leading up to the deck itself.

9.1 Step Count

From the pad up to the top of the decking, use a board to measure out 7 ¾". 7 ¾" is the maximum height for a step. If you only measure out one step, then one step is all you need. If you don't measure out that height because the deck is low enough to the ground, then steps are not required. The height of a step is called a riser.

Each step tread is usually made up of two 2x6 boards. The width of the step has to be a minimum of 36".

9.2 Stringers

Being that deck steps differ more than any other part of a deck, there is no one way to install them.

Once you have the correct measurements all sorted out you can start to piece together the stair stringers. Stringers are the sides of the steps.

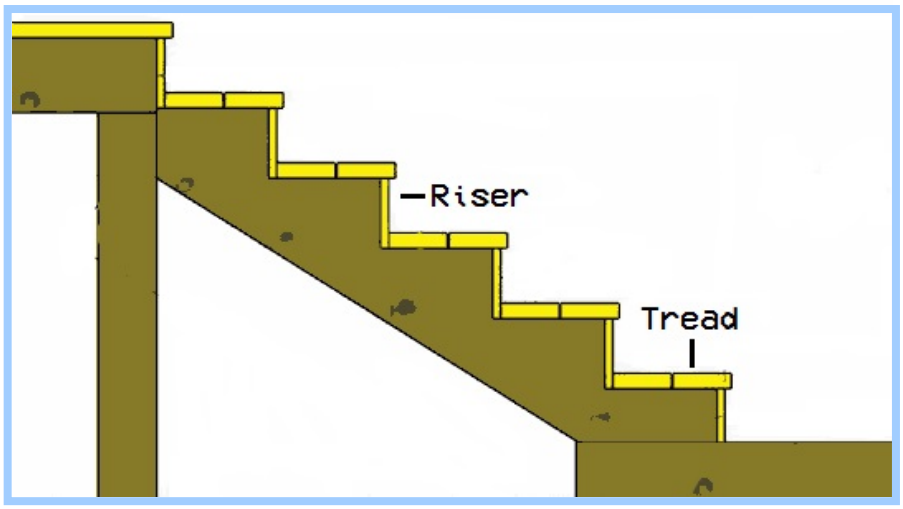

Diagram 9.1 Riser and Tread Example

9.3 Installing Steps

1. Use 2x12 Boards
2. Use a Framing Square
   Set stair gauges on a framing square at the height of the rise and the length of the run.
3. Continue Measuring
   Slide the square along the plank, and mark both rise and run for the next step. Continue marking until you have the correct number of steps laid out.
4. Cut the Boards
   Use a circular saw to cut out the marked shape of the stringers.
5. Install the Stringers
   The stringers can be installed directly to the end joists. They can also be installed to a board installed directly beneath the joist for additional durability. Use hardware with strong structural screws to connect to the joists/board. Don't install directly to the joist/board with some sort of installation hardware connection.
6. Measure the Tread Distance
   Using the measurement from earlier (minimum of 36"), measure the tread distance from one stringer to the other.
7. Install the Risers and Treads
   Nail in the risers to the stringers, then screw in the treads to the risers. Leave a ¼ inch gap between steps. Repeat this process for the number of steps required.

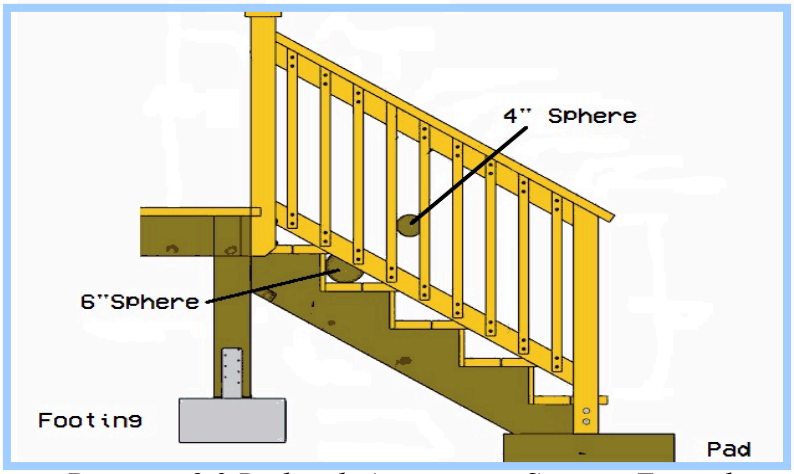

Diagram 9.2 Rail with Appropriate Spacing Example

9.4 Step Handrails

Much like the guardrails, a deck's step handrails is an important safety feature that will aid people up and down the deck with ease. Also like the guardrails, step handrails are only required for decks with four or more risers. If your deck is below that height then the step handrails are not required, though you can still install them if you desire.

The handrail will attach to a bottom post, and to the guardrail on the deck. The first step is to attach a bottom post that should match the height of the guardrail post on the deck. The post should be screwed into the stringer.

The spacing of the railing is similar to the guardrails. A 4" sphere (ball) should not fit through the rail pickets. A 6" sphere (ball) should not fit beneath the rail.

These are the steps for installing the step handrails:

1. Secure Bottom and Top Stair Rail Post to Stair Framing with 1/2" Bolts.
2. Install the Bottom Rail Centered Between Posts.
3. Install the Rail Pickets
4. Install the Top Rail to the Rail Pickets and Both Posts
5. Schedule the Final Inspection

With the steps and handrail finished you can then schedule the final Code & Construction inspection for your deck and get a Certificate of Approval (CA)